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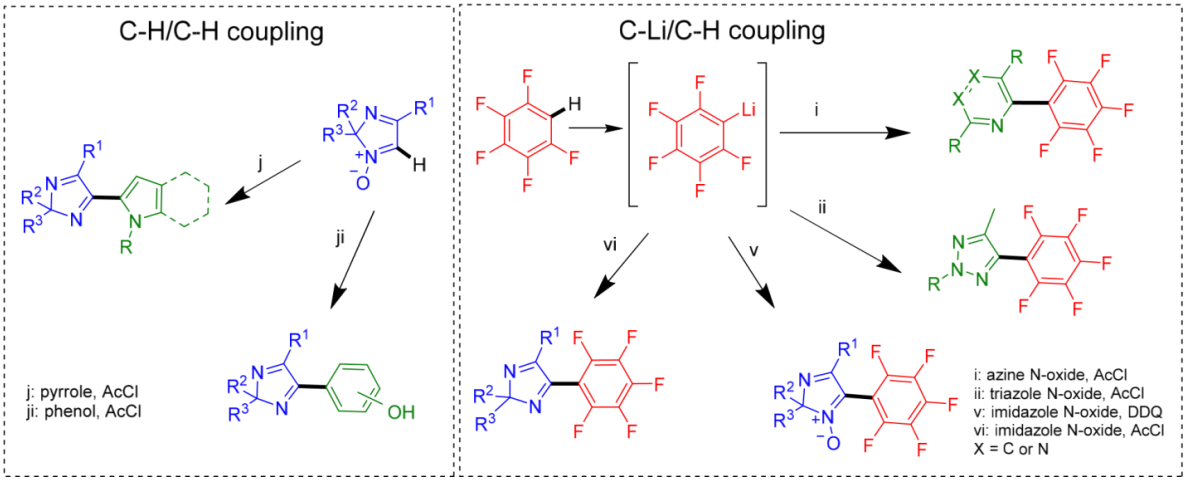
TRANSITION METALL-FREE C-H/C-H AND C-LI/C-H COUPLING IN THE SYNTHESIS OF NEW AZAHETEROCYCLESDERIVATIVES

Timofey D. Moseev,[a] Mikhail V. Varaksin,[a,b] , Egor A. Nikiforov,[a] Denis A. Gorlov[a] Oleg N. Chupakhin,[a,b] Valery N. Charushin[a,b]

[a]Ural Federal University, 19 Mira St., 620002, Ekaterinburg, Russia
[b]Institute of Organic Synthesis, Ural Branch of the Russian Academy of Sciences,
22 S. Kovalevskaya St., 620041 Ekaterinburg, Russia. E-mail: chupakhin@ios.uran.ru

Abstract. Over the past decades, a progress in the synthesis via transition metal-free C–H bond functionalization reactions has been observed. This green chemistry-oriented strategy is highly attractive sin it allows one to avoid protecting groups, to shorten the reaction time, to reduce. Reactions of nucleophilic substitution of hydrogen (S_N^H), being one of the promising mode of C-H functionalization methodology, has been used in our research project as a basic approach in two different synthetic schemes. The first one is direct C–H/C–H coupling of imidazole N-oxides with C-nucleophiles (pyrroles and phenols) by action of the activated starting substrate with acylating agent resulted in the substituted imidazoles as promising anti-radical and neuroprotection activity agents (Scheme 1 left). The second one is direct C-Li/CH coupling of pentafluorophenyl lithium, which was obtained *in situ* from pentafluorobenzene and n-BuLi, with azine or azole N-oxides was found to afford polyfluorinated azaheterocycles of special interest as new materials with photoluminescent properties (Scheme 1 right).



Scheme 1. C-H/C-H and C-Li/C-H coupling in the synthesis of new azaheterocycles derivatives.

As a result, transition metal-free C-H/C-H and C-Li/C-H coupling strategies were successfully applied to 2*H*-imidazole-N-oxides and pentafluorophenyllitium in the synthesis of novel azaheterocycles derivatives of the particular interest in medicinal and coordinational chemistry, photoactive materials etc.

References

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